

CLAIMS:

What is claimed is:

- 1 1. An apparatus comprising:
 - 2 an analog photocell adapted to capture light energy incident
 - 3 upon it as an analog signal;
 - 4 a sample-and-hold amplifier coupled to said photocell and
 - 5 adapted to store said analog signal;
 - 6 a digital converter coupled to said amplifier said converter
 - 7 transforming said analog signal into a digital value, said value
 - 8 proportional to the amount of said light energy.
- 1 2. An apparatus according to claim 1 wherein said digital
 - 2 converter includes:
 - 3 a voltage controlled oscillator;
 - 4 a counter coupled to said oscillator, said oscillator setting
 - 5 the rate of increase of said counter, said rate proportional to
 - 6 said stored analog signal.
- 1 3. An apparatus according to claim 2 further comprising:
 - 2 a register coupled to said counter, said register receiving
 - 3 said digital value as an output of said counter at the end of a
 - 4 predetermined time period.

1 4. An apparatus according to claim 2, wherein said digital
2 converter includes:

3 a scaling signal supply, said supply adapting the output of
4 said oscillator in a dynamic range consistent with ambient
5 lighting to which said photocell is exposed.

1 5. An apparatus according to claim 1 utilized in an imaging
2 device.

1 6. A system comprising:

2 an array of analog photocells;

3 a first array of shift cells, each of said first array
4 shift cells coupled to one of said analog photocells; and

5 a second array of shift cells coupled to said first array
6 shift cells such that each first array shift cell is coupled to
7 one of said second array shift cells.

1 7. A system according to claim 6 further comprising:

2 a differential operational amplifier having two input
3 terminals, one input terminal coupled to the terminating output
4 of said first array of shift cells, the other input terminal
5 coupled to the terminating output of said second array of shift
6 cells, said amplifier providing a signal representative of the

7 difference between said first array terminating output and said
8 second array terminating output.

1 8. A system according to claim 7, wherein a set of such
2 signals, said set as large as the size of said first array,
3 represent a delta frame of an image.

1 9. A system according to claim 7, wherein said second array
2 terminating output represents a key frame of an image when said
3 system is first initiated.

1 10. A system comprising:
2 a first array of shift cells, the output of each of said
3 first array shift cells coupled to the input of the next of said
4 first array shift cells;
5 a second array of shift cells; and
6 an array of analog photocells, each of said photocells
7 coupled to a corresponding one of said second array shift cells.

1 11. A system according to claim 10 comprising:
2 a differential operational amplifier, having two input
3 terminals, one input terminal coupled to the terminating output
4 of said first array of shift cells, the other input terminal
5 coupled to the terminating output of said second array of shift

6 cells, said amplifier providing a signal representative of the
7 difference between said first array terminating output and said
8 second array terminating output.

1 12. A system according to claim 11, wherein a set of such
2 signals, said set as large as the size of said first array,
3 represent a delta frame of an image.

1 13. A system according to claim 11 further comprising:
2 a regeneration amplifier having an input terminal coupled
3 to the terminating output of said second array of shift cells,
4 the output of said regeneration amplifier coupled to the
5 initiating input of said first array of shift cells, said
6 regeneration amplifier enhancing the terminating output of said
7 second array of shift cells.

1 14. An apparatus comprising:
2 a digital photocells, representing the light intensity of
3 an area of an image as a pixel value;
4 a holding register coupled to said photocell, said register
5 receiving said value; and
6 a subtraction unit coupled to both said photocell and said
7 holding register, the subtraction unit differencing a current

value of said photocell with a previous value stored in said holding register.

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n apparatus according to claim 14 further comprising:
an output bus; and
a multiplexer coupled to said subtraction unit and said photocell, said multiplexer selectively routing the output of said subtraction unit and the output of said photocell to said output bus.

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